



SPECIAL REPORT RDMR-WD-16-07

MULTI-GIGABIT FREE-SPACE OPTICAL DATA COMMUNICATION AND NETWORK SYSTEM

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**Weapons Development and Integration Directorate
Aviation and Missile Research, Development,
and Engineering Center**

April 2016

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13. ABSTRACT (Maximum 200 Words) This report discusses the United States (U.S.) Army Aviation and Missile Research, Development, and Engineering interest in the multi-gigabit free-space optical data communication and network system for the Society of Photographic Instrumentation Engineers (SPIE) Defense and Security Symposium during 17 to 21 April 2016.				
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Symposium**

*Multi-Gigabit Free-Space
Optical Data
Communication and
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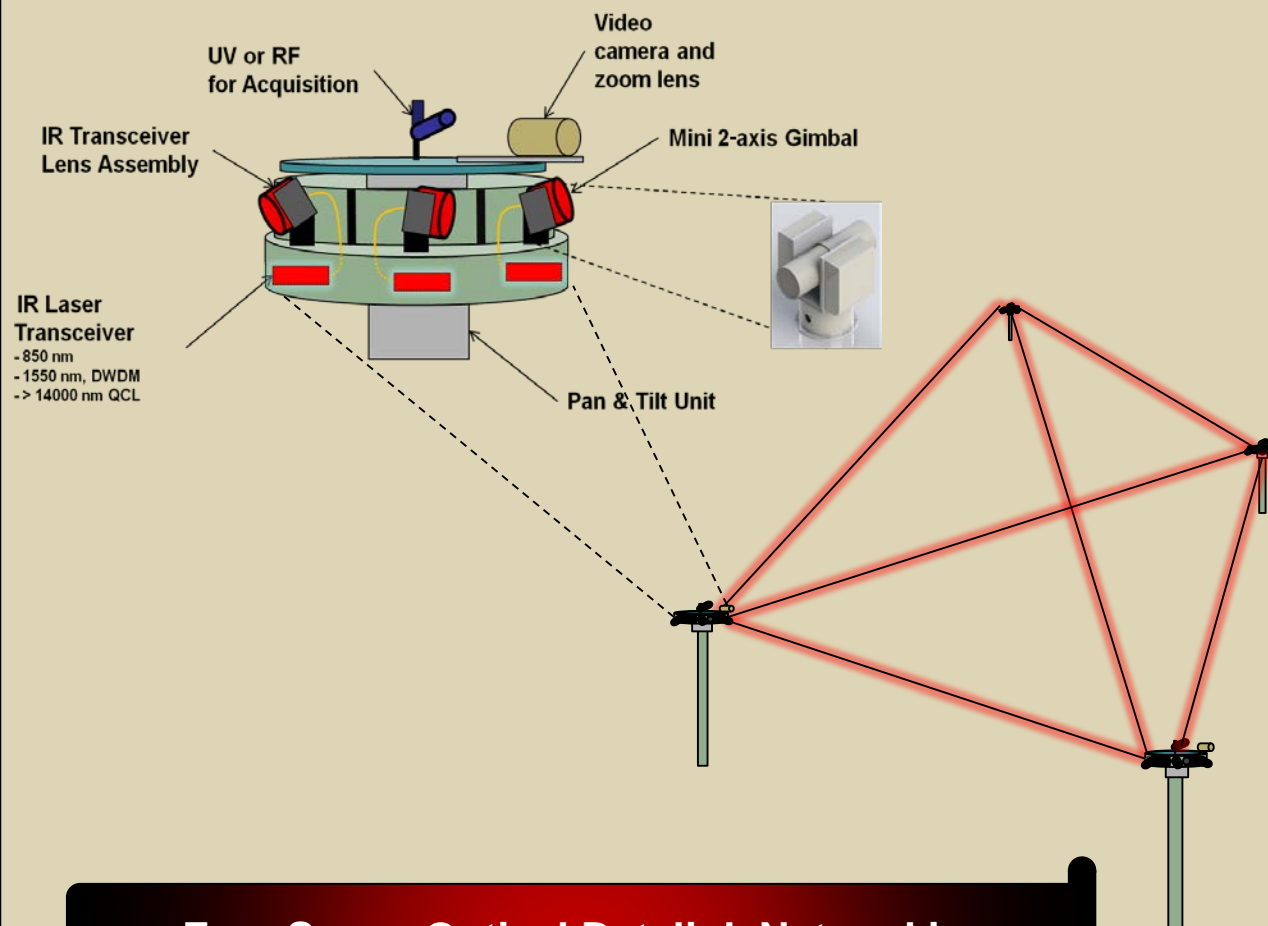
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17-21 April 2016

Free Space Optical Datalink Networking Concept



Concept Capabilities

- High Bandwidth – Multi-Gigabits per second
- 360° sectored coverage
- Multipoint-to-multipoint simultaneous communication
- Mobile communication:
 - on the move tracking
 - adaptive beam
- Networking
- High covertness with no frequency approval requirement
- No spectral congestion or vulnerability to EA/Cyber attacks.

Free-Space Optical Datalink Networking Concept



Free Space Optical Datalink Timeline



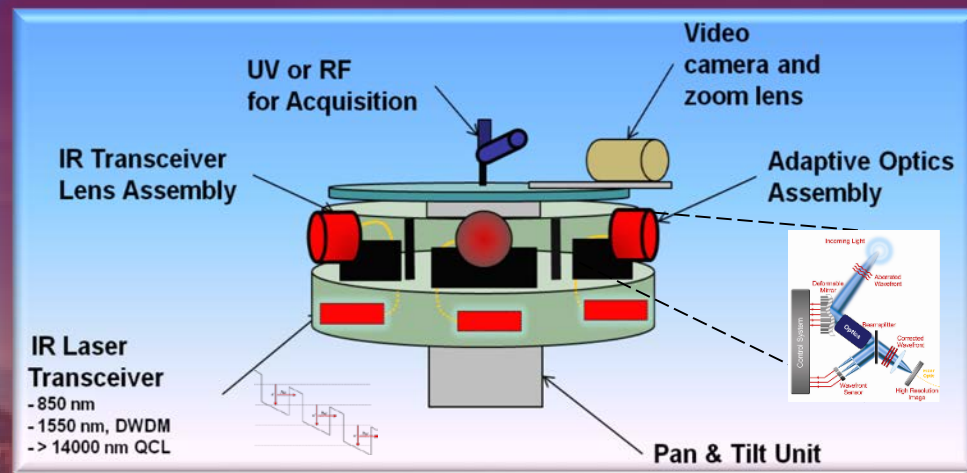
Phase 1

Point-to-point
demonstration
2012



Future

Adaptive optic & Quantum Cascade Laser Technologies
2017-2022



Phase 2

Point-to-point
Enhanced fine Acq. -
Adaptive Beam
Tracking
2015-2016



Phase 3
Multipoint-to-
multipoint network
2017





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